

# Health and Nutrition Assessment Handbook

## Biochemical/Bloodwork

Iron is of special interest to WIC because the populations served by WIC are those who are the most likely to be deficient in iron. The only way to determine whether a person has adequate iron stores is to do some type of blood test.

### Minimum Criteria for Hematological Equipment

#### Minimum Purchasing Criteria for Analyzers

- Equipment must be Clinical Laboratory Improvement Amendments (CLIA) exempt/waived.
- Equipment must be approved for pediatric and adult use.
- Internal self test instead of control cuvette.
- Machine must be durable and easy to clean.
- Results must be easy to read to ensure accuracy.
- Results must indicate read-out increments for hemoglobin testing in .1mg/dl or 1/10<sup>th</sup> of a percent.
- Power source is electrical or battery or both.

#### Minimum Selection Criteria for Sharps

- Sterile, single use disposable stylet
- Capable of controlling the depth of the puncture
- Retractable type recommended

#### Minimum Selection Criteria for Disposable Containers

- Puncture proof for sharp objects
- Hazardous materials bag for blood-related materials (e.g. bloody gauze, gloves, etc.)
- Labeled as "Biohazard"
- Placed in a secure place

#### Minimum Criteria for Microcuvettes

- Microcuvettes are stored at room temperature, away from any direct heat source.
- The vial should be kept tightly capped and cuvettes should be removed as needed for testing just prior to use. Unopened cuvettes have a shelf life of two (2) years from the date of manufacture.
- The expiration date is printed on each vial. Do not use expired Microcuvettes. The expired Microcuvettes should be returned to state office.
- Vials of cuvettes that have been opened are stable for three (3) months if the cap is kept on tightly between use.
- When opening a new vial, label with the date opened.

### Anemia Screening Guidelines

Local WIC providers can perform two types of hematological tests (hematocrit or hemoglobin test) to determine a participant's iron status. Iron deficiency is one of the most common

# Health and Nutrition Assessment Handbook

## Biochemical/Bloodwork

nutritional deficiencies. A diagnosis of anemia can only be made by a physician or other health care provider (physician assistant or nurse practitioner). The anemia screening performed in the WIC clinic provides information on the hemoglobin status of the participant (low or normal), enables staff to assign the applicable nutrition risk factor, guides nutrition education and assists in making appropriate referrals.

The chart below indicates the timeframes when local WIC provider staff shall collect blood work data.

	Prenatal	Breastfeeding and Non-breastfeeding	Infants 0-11 Months	Children 12-23 Months	Children 2-5 Years
<b>Data must be reflective of category<sup>1</sup></b>	Yes	Yes	Yes	Yes	Yes
<b>Timeframes to collect bloodwork data</b>	At the earliest opportunity during the pregnancy, usually the first visit	4-6 weeks postpartum	Between 9-11 months of age <sup>2</sup>	One blood test is required between 1 – 2 years of age (recommended at 15-18 months of age, ideally to be done 6 months after the infant screening) <sup>3</sup>	Once every 12 months for children 2-5 years of age whose blood test results were within the normal range at their last certification. <sup>4</sup> If last blood test was abnormal, recheck at next recertification visit.
<b>Other issues specific to category and/or age</b>	The option to defer the collection of blood test data for 90 days includes presumptively eligible pregnant women, provided a risk is identified within the 60-day time frame allowed for presumptive eligibility.	For breastfeeding women 6-12 months postpartum, no additional blood test is required if a blood test was already obtained after delivery and documented by the WIC local agency. <sup>5</sup>	A blood test before nine months of age may be appropriate for preterm and low birthweight infants or infants not fed iron-fortified formula. All other infants should be screened for anemia at 9 -11 months of age. <sup>6</sup>	One blood test taken at or before 12 months cannot fulfill the requirement for both the infant and the 1-2 year old child screening.	Children 2-5 years of age with a positive anemia screening result must have a blood test at each recertification visit until the hemoglobin or hematocrit is within normal limits as defined by the Missouri WIC Program Guidelines.

<sup>1</sup> Bloodwork data must be documented for all participants greater than 9 months of age (with the exception of breastfeeding women 6-12 months postpartum) at the time of certification or within 90 days of certification, so long as the applicant is determined to have at least one qualifying nutritional risk factor at the time of certification. The use of referral hematological data is permitted as long as: a) it is reflective of a woman applicant's category; b) it conforms to the anemia screening schedule for infants and children; and c) the date of the blood test, if different from the date of certification, is recorded.

<sup>2</sup> The use of bloodwork data taken before 9 months of age for certification purposes, is permissible to allow for flexibility on a case-by-case basis. Refer to policy for details. Children between 9 – 18 months of age are at the highest risk of any group for iron deficiency. CDC recommends two screenings during this vulnerable time (Morbidity and Mortality Weekly Report; April 3, 1998; Vol. 47; No. RR-3)

<sup>3</sup> CDC's Morbidity and Mortality Weekly Report (MMWR); April 3, 1998; Vol. 47; No. RR-3

<sup>4</sup> Children 24 months of age (minimum 22 months of age) are required to have bloodwork data for the 2-year old certification/recertification visits.

<sup>5</sup> For breastfeeding women being (re)certified at 6-12 months postpartum who had a positive anemia screen result when tested after delivery, the WIC health professional should ensure and document that appropriate treatment and follow-up occurred. A follow-up blood test in such a case is an allowable WIC expense.

<sup>6</sup> CDC's Morbidity and Mortality Weekly Report (MMWR); April 3, 1998; Vol. 47; No. RR-3)

# Health and Nutrition Assessment Handbook

## Biochemical/Bloodwork

### HemoCue® Hemoglobin System Overview

(Information provided by HemoCue, Inc.)

The HemoCue Hemoglobin System is used for the quantitative determination of hemoglobin in blood using a specially designed photometer, HemoCue Hemoglobin Photometer, and specially designed microcuvettes, HemoCue Hemoglobin Microcuvettes.

The quantitative hemoglobin determination is indicated as a general fundamental test in acute as well as elective care. The test is used in assessing the status of a patient in such clinical situations as hemorrhage, hemolysis, dehydration and other shifts in plasma volume – and for verifying the results of transfusion or treatment of other deficiency states such as malnutrition.



### Hemoglobin Training

Qualified local WIC provider staff must complete the required training before performing hemoglobin/hematocrit blood work on participants.

Who can provide the training to local WIC provider staff?

- HemoCue Clinical Education Specialist
- Registered Nurse (RN) who has been trained by the HemoCue Clinical Education Specialist. *Note: for an RN, another RN must validate procedures.*

HemoCue will provide the training at no cost to the local WIC Provider. The LWP staff may call 800-881-1611 to arrange training.

Document the following in the individual's training file:

- Who provided the training
- When the training was completed

### Procedure for Capillary (Finger) Testing

1. *Note: Toe sticks are not allowed. Heels can be used until the infant is walking. Once the infant begins to walk, a finger stick is required.*
  - a. For best results, use the middle or ring finger for sampling.
  - b. Remove a cuvette from the vial and recap the vial immediately.
  - c. Do a finger or heel puncture (see note above). The participant's fingers should be straight but not tense to avoid restricted blood flow.
2. Clean the puncture site with alcohol. Wipe off the alcohol with a clean, dry lint free wipe or allow it to air dry completely.
3. Using your thumb, lightly press the finger from the top of the distal knuckle to the tip. This stimulates the blood flow towards the sampling point.
4. Position the lancet device so that the puncture will be made across the whorls (lines) of the fingerprint. Press the lancet firmly against the finger prior to activating the lancet to aid in obtaining a good sample.

## Health and Nutrition Assessment Handbook

### Biochemical/Bloodwork

5. While maintaining gentle pressure on the tip of the finger, perform the stick off-center on the fingertip. Discard the lancet in an approved container.
6. Using dry gauze or other lint free tissues, wipe away the first two or three large drops of blood, applying light pressure as needed again until another drop of blood appears. This stimulates blood flow and lessens the likelihood of a dilutional effect by interstitial fluid. Avoid “milking of the finger.”
7. Make sure the drop of blood is big enough to fill the cuvette completely. Hold the cuvette at the “wing” end and introduce the cuvette tip into the middle of the drop of blood. Fill the cuvette in one continuous process. Do not refill a partially filled cuvette.
8. Wipe off any excess blood from the outside of the cuvette using a clean, lint free tissue, taking care not to touch the opened end of the cuvette.
9. Visually inspect the cuvette for air bubbles in the optical eye. If bubbles are present in the optical eye, discard the cuvette.
10. The filled cuvette should be analyzed immediately or at the latest within 10 minutes after it has been filled. Filled cuvettes are to be kept in the horizontal position. Place the filled cuvette into the cuvette holder and gently slide the holder into the measuring position. The result will be displayed within 60 seconds. Pull the cuvette holder out to the loading position. Remove the cuvette and discard it in an appropriate biohazard container.
11. **Change gloves between all participants, including family members,** after completing the procedures.
12. Turn the power switch to “off” at the conclusion of all testing for the day.

#### **Repeat Hemoglobin When Low Values Are Obtained**

Once the low hemoglobin has been reported to the participant’s health care provider who will monitor the situation, there is no need for repeat blood work until the participant’s next recertification.

## Analyzer Maintenance & Repair

### **Maintenance**

- No preventative maintenance is needed for the electronic components of the photometer.
- The cuvette holder should be removed at the end of each day of use for cleaning. Alcohol or mild soap solution may be used. It may also be autoclaved. It is important that the holder is completely dry before being replaced in the photometer.
- The exterior of the photometer may be cleaned as necessary with alcohol or a mild soap solution.
- Local WIC Providers shall assure accuracy of hematological equipment by following the manufacturer’s recommendations, instructions for usages, calibrations, service and cleaning.

# Health and Nutrition Assessment Handbook

## Biochemical/Bloodwork

### Repair Service

HemoCue has provided the following telephone number: 1-800-426-7256. The HemoCue staff can answer questions on issues such as power cord problems and general problems with the analyzers or make the appropriate connections to someone who can address a more complicated problem.

### **HemoCue Supplies Arrive in the Clinic**

When you receive the order, please verify the number of microcuvettes received with the number listed on the packing slip. If the number of microcuvettes/analyzers in the package is the same as the packing slip, sign and date the packing slip. Please fax the packing slip to State WIC office at 573-526-1470 within one (1) week of receiving the shipment. Confirmation on the packing slip is required in order for the State WIC Office to pay for the microcuvettes/analyzers and to send WIC inventory tags for the analyzers.



If the number of microcuvettes/analyzers received is different from the packing slip, please call 1-800-392-8209. If you are unable to locate your packing slip, please send an email to [WICOperations@health.mo.gov](mailto:WICOperations@health.mo.gov) stating how many boxes or analyzers you received and the date you received the shipment.

Expired microcuvettes should be mailed to the State WIC Office at PO Box 570, Jefferson City, MO 65102. Contact the state WIC office for the procedure to dispose of expired microcuvettes/analyzers. If you find that you are in need of microcuvettes, please email the State WIC Office at [WICOperations@health.mo.gov](mailto:WICOperations@health.mo.gov) or call 1-800-392-8209.